

RP0906 - OPERATE VEHICLE WITH TOWED LOAD

PURPOSE. This class will provide instruction on identifying the components of a trailer when coupling, proper coupling and uncoupling procedures, and proper driving techniques and considerations when towing a trailer. This class is just one of several periods of instruction to provide you, as the operator, with the knowledge on how to use the vehicle's full capabilities, such as towing a trailer, to complete the mission.

LEARNING OBJECTIVES:

a. TERMINAL LEARNING OBJECTIVE(s):

(1) Provided with an operational M series vehicle, trailer, and references, operate M series vehicle with towed load, to safely meet operational requirements with no injury to personnel or damage to equipment, per the reference. (RP00.09.07)

b. ENABLE LEARNING OBJECTIVE(s):

(1) Provided with an operational M series vehicle, a trailer and references, connect a towed load to the vehicle to safely meet operational requirements with no injury to personnel or damage to equipment, per the references. (RP00.09.07a)

(2) Provided with an operational M series vehicle, a trailer and references, operate the vehicle with towed load in forward and reverse to safely meet operational requirements with no injury to personnel or damage to equipment, per the references. (RP00.09.07b)

(3) Provided with an operational M series vehicle, a trailer and references, park the vehicle with towed load to safely meet operational requirements with no injury to personnel or damage to equipment, per the references. (RP00.09.07c)

(4) Provided with an operational M series vehicle, a trailer and references, disconnect the towed load from the vehicle to safely meet operational requirements with no injury to personnel or damage to equipment, per the references. (RP00.09.07d)

GENERAL:

a. All HMMWV variant vehicles are capable of towing M116 Series trailers, M101 Series trailers and the M102 Howitzer. Only vehicles that have been retrofitted with MWO 9-2320-280-20-6 Airlift Bumper Reinforcement, or MWO 9-2320-280-20-7 Cross member Reinforcement, are authorized to tow M1101 and M1102 trailers. Due to the numerous model differences, you must refer to Table 2-3.1 in the Technical Manual to determine towing authorization for the M1101 and M1102.

b. The M998 Series and A1 Series have a maximum towed load capacity of 3,400 lb. The Heavy Variant (M1097, M1097A1, M1097A2 and M1123) and A2 Series have a maximum towed load capacity of 4,200 lb.

c. The ambulances are authorized to tow trailers only during administrative or tactical moves, when not transporting patients.

- d. Trailer payloads should be evenly distributed to prevent excessive tongue loads.
- e. Ensure the trailer is appropriately dispatched prior to departing.

COMPONENTS:

As an operator, you need to be familiar with various components on the towing vehicle and the trailer to properly connect the trailer to the towing vehicle. We will cover these components.

- a. Bumperette: Located on the rear of the towing vehicle and where the towing pintle is located.
- b. Towing pintle: Located on the towing vehicle where the trailer is connected to the towing vehicle
- c. Trailer Electrical Cable Receptacle: Located on the back of towing vehicle bumperette. Used to connect trailer inter-vehicle electrical cable to power all lights on trailer.
- d. Eye bolts: Located on rear of towing vehicle. Used to connect trailer safety chains to towing vehicle.
- e. Breakaway Chain: Located on trailer, connected to towing vehicle and sets brakes of trailer if trailer becomes disconnected from towing vehicle.
- f. Safety Chains: Attached to trailer and connected to the towing vehicle to ensure trailer does not become detached from towing vehicle.
- g. Inter-Vehicle Electrical Cable: Located on trailer and is connected to towing vehicle to provide electrical power to all trailer lights.
- h. Draw Bar Coupler: Located on front of trailer. Connects trailer to towing vehicle pintle hook.
- i. Front support Leg: Located under trailer drawbar. Provides support to trailer when disconnected from towing vehicle.
- j. Hand Crank: Located on support leg and is used to raise or lower front of trailer.
- k. Rear Stabilizer Leg: Located under rear of trailer and is used to provide support to trailer when towing vehicle is disconnected. Not all trailers have rear stabilizer.

SAFETY:

- a. Towing trailers too large or too small for the vehicle capacity is dangerous. These trailers do not track the vehicle properly, cargo shifting occurs, and the likelihood of trailer capsizing during movement is increased. This could result in damage to equipment, and injury or death to personnel.
- b. Be sure to close tailgate of towing vehicle before connecting and while towing trailer. Failure to do so may cause damage to the master cylinder of the trailer.
- c. Towing any trailer with a HMMWV other than the authorized M116 series, M101 series, M1101, and M1102 trailers or a M102 Howitzer is not authorized.

- d. When towing a trailer, the maximum safe side slope is reduced from 40% to 30%.
- e. If personnel are standing between the vehicle and the trailer, DO NOT move the vehicle. Failure to comply may cause serious injury or death.
- f. Ensure weight of trailer is on front support leg before raising rear stabilizer. Failure to follow this warning may cause trailer to tip, resulting in serious injury to personnel or damage to equipment.
- g. All personnel must stand clear of towing vehicle and trailer during coupling operation. Failure to follow this warning may result in serious injury or death to personnel.
- h. Drawbar is heavy, especially on loaded trailer. Use two or more persons to assist lifting trailer drawbar. Failure to follow this warning may result in injury to personnel.

COUPLING TRAILER TO TOWING VEHICLE:

In this section of the lesson, you will be shown how to properly connect a trailer to the pintle hook of the towing vehicle, the proper procedure for connecting the inter-vehicle electrical connector, and to properly connect the safety chains.

- a. It is especially important you understand how to properly connect a trailer to a HMMWV. If the trailer is connected incorrectly, it may cause injury to personnel and damage to equipment.
- b. Ensure towing vehicle and trailer are on level ground before coupling and apply hand brake on trailer.
- c. Ensure weight of trailer is on front support leg before raising rear stabilizer if the trailer is equipped with a rear stabilizer. Failure to follow this warning may cause trailer to tip, resulting in serious injury to personnel or damage to equipment.
- d. If trailer is equipped with rear stabilizer, turn foot assembly as far as it will go into rear stabilizer. Swing rear stabilizer up until latch hook locks onto up-latch pin.
- e. Remove safety pin from pintle hook of towing vehicle.
- f. Pull up locking latch to open pintle hook on towing vehicle.
- g. Back towing vehicle in front of drawbar coupler ensuring all personnel stand clear of towing vehicle and trailer while towing vehicle is in motion. No personnel are allowed between towing vehicle and trailer when backing vehicle. Use ground guide to assist in backing towing vehicle. Failure to follow this warning may result in serious injury or death to personnel.
- h. Use hand crank to adjust height of drawbar coupler on trailer. Place drawbar coupler into pintle hook of towing vehicle. Use additional personnel to assist lifting drawbar due to drawbar weighing over 200 lbs.
- i. Close pintle hook and check to see that the locking latch is locked by pulling up on pintle hook. Pintle hook should not come up or open. Install safety pin in pintle hook.
- j. Safety Chains/Breakaway Chain.

The safety chains and breakaway chain are used in case the trailer connection or pintle hook fails. This will ensure the trailer will not fully disconnect from the tow vehicle and cause a serious injury to personnel or damage to equipment.

(1) Cross the two safety chains under drawbar coupler and hook to the towing vehicle eye bolts.

(2) Attach the breakaway chain to towing vehicle and ensure there is enough slack to allow trailer to make full turns.

(3) Ensure breakaway lever is pushed all the way back toward trailer and that the ratchet teeth are not engaged in leaf spring. If ratchet teeth are engaged in leaf spring, lift leaf spring and push breakaway lever all the way back toward trailer. If break away lever is not fully released trailer brakes will drag, heat up, and burn out or catch fire.

k. Inter-Vehicle Electrical Cable.

The inter-vehicle electrical cable is used to provide electricity to the trailer from the towing vehicle to operate all the lights on the trailer.

(1) Open latch cover of inter-vehicle electrical cable and push latch to hold latch cover open.

(2) Lift receptacle cover of towing vehicles. Align connector and push plug of inter-vehicle cable all the way into towing vehicle receptacle. Release receptacle cover. Ensure tab of cover of receptacle on towing vehicle rest in slot of inter-vehicle electrical plug.

l. Pull out on plunger and raise front support leg. Lock front support leg in raised position by pushing in plunger all the way.

m. Stow hand crank on front support leg with chain and cotter pin.

n. Release handbrakes on trailer.

o. Conduct a light test on the trailer to ensure all light are operational and ensure all connections are secured and safety chains connected prior to moving trailer.

TOWING INSTRUCTIONS.

a. Driving

(1) When a trailer is coupled, always start and stop towing vehicle slowly and gradually. Do this whether or not trailer is loaded. Sudden stops may cause trailer drawbar to bend or buckle and may cause damage to hydraulic brake actuator assembly.

(2) Sudden and fast acceleration will cause hydraulic brakes to apply and lock up the tires.

(3) Never exceed maximum speed of 50 miles per hour (MPH) on highway or 6 miles per hour (MPH) cross country when towing a trailer.

(4) When driving towing vehicle and trailer, overall length of unit must be kept in mind when turning and passing other vehicles. Because unit is hinged in the middle, turning and backing are also affected. Heavier payloads will increase stopping distance and decrease off-road maneuverability.

b. Turning.

(1) When turning corners, allow for the fact that trailer wheels turn inside the turning radius of towing vehicle. Turning tight turns may cause damage to hydraulic brake actuator assembly.

(2) To make a right turn at an intersection, drive towing vehicle partway into intersection, then cut sharply to the right. This will allow for turning radius of trailer keeping trailer wheels off the curb.

c. Backing.

(1) Always back towing vehicle slowly and gradually. Jack-knifing when backing the trailer may cause damage to hydraulic brake actuator assembly on the trailer.

(2) Use assistant driver or another person act as a ground guide to assist.

(3) Adjust all towing vehicle rearview mirrors before backing.

(4) When backing, rear of trailer will move in opposite direction in which towing vehicle is turned. When towing vehicle is turned to the right, rear of trailer will go left. When towing vehicle has turned and backing in a straight line is required, turn towing vehicle in direction trailer is moving. This will slowly bring towing vehicle and trailer into a straight line.

d. Stopping.

(1) Always stop towing vehicle by applying brakes gradually and smoothly. Do this whether or not the trailer is loaded. Sudden stops may cause trailer drawbar to bend or buckle and may cause damage to hydraulic brake actuator assembly.

e. Parking.

(1) When towing vehicle and trailer are to be left unattended, set towing vehicle parking brake, turn off engine, and set wheel chocks.

(2) Apply trailer handbrakes. Ensure and release handbrake before departing. Failure to release handbrake could damage vehicle and burn out brakes.

UNCOUPLING TRAILER FROM TOWING VEHICLE.

a. Ensure to apply handbrakes on trailer and towing vehicle.

b. Pull out on plunger and lower front support leg on trailer. Lock front support leg in lowered position by pushing in plunger all the way.

- c. Lift receptacle cover of towing vehicle from slot and disconnect plug of inter-vehicle cable from towing vehicle receptacle.
- d. Pull back latch. Latch cover of inter-vehicle cable is spring loaded to close cover.
- e. Remove breakaway chain from towing vehicle. Remove two safety chains from towing vehicle eyebolts.
- f. Ensure load in trailer is evenly distributed before removing drawbar coupler from pintle hook. Failure to follow this warning may cause trailer to tip, resulting in injury to personnel or damage to equipment.
- g. Remove safety pin from pintle hook.
- h. Pull up on locking latch and open pintle hook.
- i. Use hand crank to adjust height of drawbar coupler. Remove drawbar coupler from pintle hook. Drawbar is heavy especially with loaded trailer. Use additional personnel to assist in lifting drawbar.
- j. Close pintle hook pull up on pintle hook to ensure that locking latch is engaged. Install safety pin in pintle hook.
- k. Pull out on release handle and lower rear stabilizer if trailer is equipped with one. Turn foot assembly until it firmly contacts the ground.
- l. Towing vehicle is now ready to be moved from trailer.

STUDENT REFERENCES:

FM 21-305
TM 10629-10B
TM 9-2320-202-14&P